

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 59441-PCT	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/US2004/021637	International filing date ( <i>day/month/year</i> ) 06 July 2004 (06.07.2004)	Priority date ( <i>day/month/year</i> ) 06 July 2003 (06.07.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant ROGER WILLIAMS MEDICAL CENTER		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																
2.	This REPORT consists of a total of 5 sheets, including this cover sheet.  In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;"><input checked="" type="checkbox"/> Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/> Box No. II</td> <td>Priority</td> </tr> <tr> <td><input checked="" type="checkbox"/> Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/> Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/> Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/> Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/> Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/> Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/> Box No. I	Basis of the report	<input type="checkbox"/> Box No. II	Priority	<input checked="" type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/> Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/> Box No. VI	Certain documents cited	<input type="checkbox"/> Box No. VII	Certain defects in the international application	<input type="checkbox"/> Box No. VIII	Certain observations on the international application
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4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																

<p style="text-align: center;">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 740 14 35</p>	<p>Date of issuance of this report 13 March 2006 (13.03.2006)</p> <p>Authorized officer  <div style="text-align: center;">Nora Lindner</div></p> <p>Telephone No. +41 22 338 89 65</p>
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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
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EDWARDS & ANGELL, LLP  
PO BOX 55874  
BOSTON, MA 02205

## PCT

REC'D 06 FEB 2006

WIPO

PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference <b>59441-PCT</b>		Date of mailing (day/month/year) <b>02 FEB 2006</b>	
		<b>FOR FURTHER ACTION</b> See paragraph 2 below	
International application No. <b>PCT/US04/21637</b>	International filing date (day/month/year) <b>06 July 2004 (06.07.2004)</b>	Priority date (day/month/year) <b>06 July 2003 (06.07.2003)</b>	
International Patent Classification (IPC) or both national classification and IPC <b>IPC(7): C12N 5/06, 5/08 and US Cl.: 435/372, 375, 376, 377</b>			
Applicant <b>ROGER WILLAAMS MEDICAL CENTER</b>			

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I      Basis of the opinion
- ☐ Box No. II      Priority
- ☒ Box No. III      Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV      Lack of unity of invention
- ☒ Box No. V      Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI      Certain documents cited
- ☐ Box No. VII      Certain defects in the international application
- ☐ Box No. VIII      Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Date of completion of this opinion <b>17 January 2006 (17.01.2006)</b>	Authorized officer Vera Afremova <i>[Signature]</i> Telephone No. (571) 272-1600
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Form PCT/ISA/237 (cover sheet) (April 2005)

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/21637

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed  
☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper  
☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in electronic form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/21637

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 4-24

because:

☐ the said international application, or the said claim Nos. \_\_\_\_\_ relate to the following subject matter which does not require an international search (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 4-24 are so unclear that no meaningful opinion could be formed (*specify*):

Claims 4-24 are multiple dependent claims and, thus, they are so unclear that no meaningful opinion can be formed (see PCT Rule 6.4 (a))

☐ the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

☐ no international search report has been established for said claims Nos. \_\_\_\_\_

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13ter.1(a) or (b).

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-bis of the Administrative Instructions, and such tables were not available to the International Searching Authority in a form and manner acceptable to it.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US04/21637

**Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-3</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-3</u>	NO
Industrial applicability (IA)	Claims <u>1-3</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and explanations:**

Claims 1-3 lack novelty under PCT Article 33(2) as being anticipated by Hagihara et al. or as being anticipated by Milhem et al.

Claims are directed to a method for the production of differentiated hematopoietic cells wherein the method comprises step of culturing bone marrow stem cells under conditions that promote synchronous progression through the cell cycle and step of contacting the cells with a growth factor or a cytokine and step of subculturing the cells until differentiated hematopoietic cells are produced. Some claims are further drawn to contacting and subculturing cells with the growth factor such as GM-CSF. Some claims are further drawn to culturing cells under conditions that promote synchronous progression through the cell cycle such as culturing in the presence of steel factor, thrombopoietin and FLT-3 ligand.

Hagihara et al. disclose a method for the production of differentiated hematopoietic cells such as dendritic cells wherein the method comprises step of culturing DC34+ bone marrow stem cells under conditions that promote synchronous progression through the cell cycle such as in the presence of steel factor, thrombopoietin and FLT-3 ligand and subsequently contacting and subculturing the cells with a growth factor GM-CSF. The method taught by Hagihara et al. comprises identical active steps and it results in the production of differentiated hematopoietic cells as required by the claimed method and, thus, the cited reference by Hagihara et al. anticipates the claimed invention.

Milhem et al. disclose a method for the production of differentiated hematopoietic cells wherein the method comprises step of culturing adult bone marrow DC34+ stem cells under conditions in the presence of steel factor, thrombopoietin and FLT-3 ligand for 48 hours to promote cell division and subsequently contacting and subculturing cells in the presence of GM-CSF to promote differentiation of hematopoietic cells. The method taught by Milhem et al. comprises identical active steps and it results in the production of differentiated hematopoietic cells as required by the claimed method and, thus, the cited reference by Milhem et al. anticipates the claimed invention.

Therefore, the claimed invention lack novelty.